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(54) CUTTING TOOL HAVING ACTIVE VIBRATION ISOLATING FUNCTION

(11) 63-180401 (A) (43) 25.7.1988 (19) JP

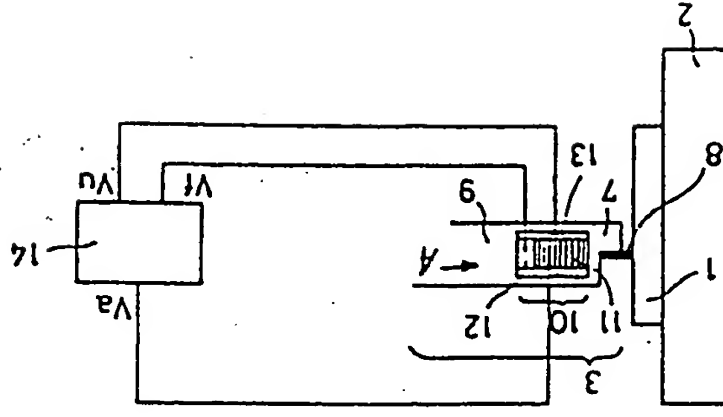
(21) Appl. No. 62-8215 (22) 19.1.1987

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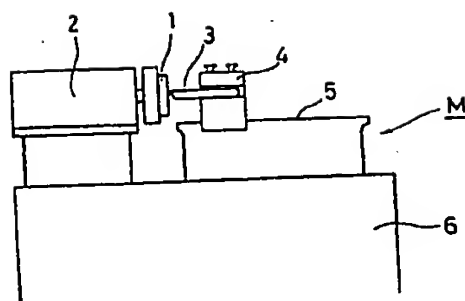
(51) Int. Cl.⁴ B23B27/00, B23B25/06

PURPOSE: To prevent production of vibration between a workpiece and a cutting tool and to enable execution of a high speed cutting work, by a method wherein a voltage applied on an actuator is regulated by computing values of signals from a load detector a relative displacement detector between the load detector and a piezo-electric actuator.

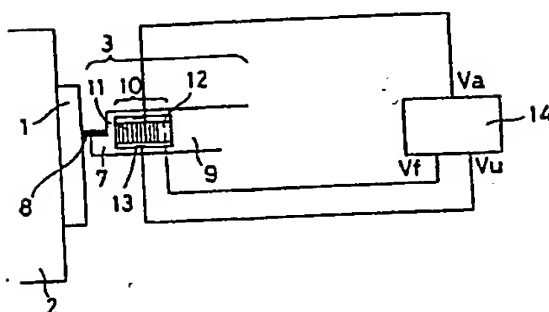
CONSTITUTION: When relative displacement between a workpiece 1 and a cutting tool 3 is fluctuated in a direction A due to vibration produced by a drive system 2, vibration propagated from the outside, or a change in a cutting force, an alternating force is exerted on a tool 3. An alternating force, propagated through a piezo-electric actuator 11, is detected by a load detector 12, simultaneously, relative displacement between a tip part 7 of the tool 3 and a root part 9 is detected by a displacement detector 13, and the alternating force and the relative displacement are inputted as a load signal and a displacement signal, respectively, to a computing device 14. When, by means of a calculated expansion and contraction amount, the actuator 11 is expanded and contracted, the alternating force propagating through the tool 3 is reduced to zero. Thus, vibration is absorbed by the tool 3, an alternating force produced between the tip part 7 and the workpiece 1 produces only the inertia force of the tip part 7 and is reduced to a low value, and a fluctuation in displacement between each of the tip part 7 and a diamond tip 8 and the workpiece 1 is decreased to zero.



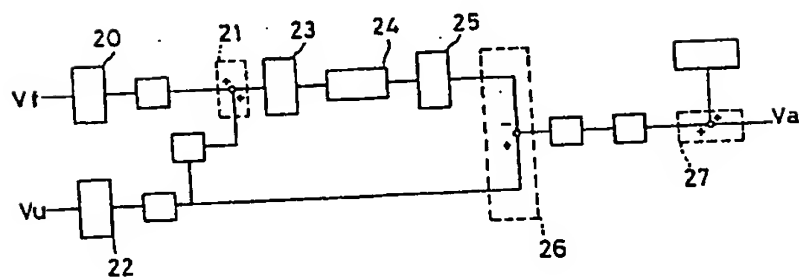
第 1 図



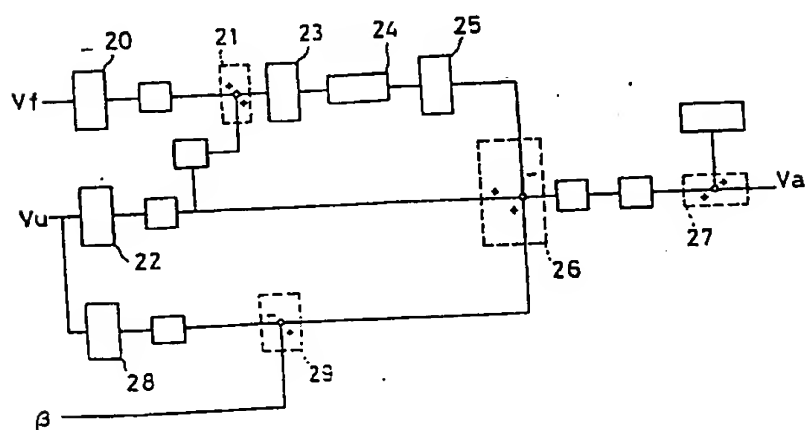
第 2 図



第 3 図

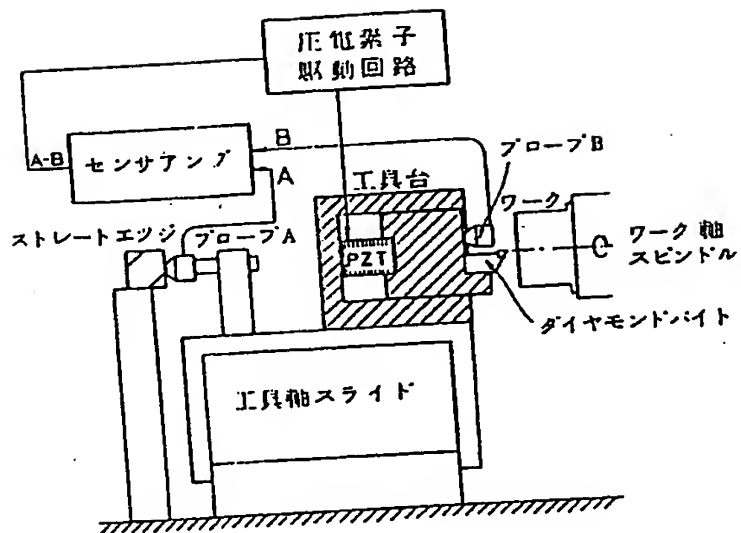


第 4 図

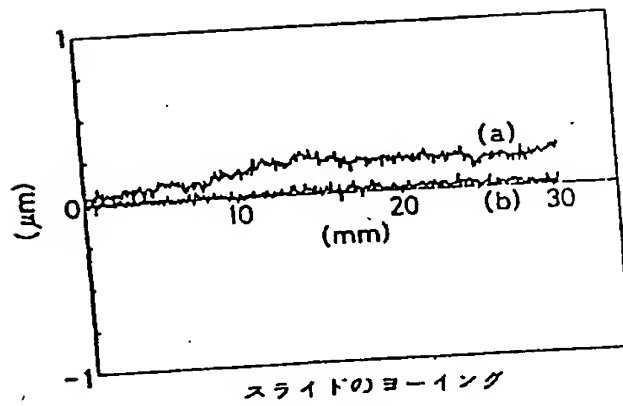


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第 5 図



第 6 図



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